

Try to find x, y, z

$$x - 3y + 3z = -4$$

$$2x + 3y - z = 15$$

$$4x - 3y - z = 19$$

$$\begin{aligned} \textcircled{1} \quad & x - 3y + 3z = -4 \\ \textcircled{2} \quad & 2x + 3y - z = 15 \\ \textcircled{3} \quad & 4x - 3y - z = 19 \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad & 2x + 3y - z = 15 \\ \textcircled{3} \quad & 4x - 3y - z = 19 \\ \hline & 6x - 2z = 34 \end{aligned}$$

$$6x - 2z = 34$$

$$3x + 2z = 11$$

$$9x = 45$$

$$\frac{9}{9} \quad \frac{9}{9}$$

$$\boxed{x = 5}$$

$$5 - 3y + 3(-2) = -4$$

$$5 - 3y - 6 = -4$$

$$-1 - 3y = -4$$

$$+1 \quad +1$$

$$-3y = -3$$

$$\frac{-3}{-3} \quad \frac{-3}{-3}$$

$$\boxed{y = 1}$$

$$\begin{aligned} \textcircled{1} \quad & x - 3y + 3z = -4 \\ \textcircled{2} \quad & 2x + 3y - z = 15 \\ \hline & 3x + 2z = 11 \end{aligned}$$

$$6(5) - 2z = 34$$

$$30 - 2z = 34$$

$$-30 \quad -30$$

$$-2z = 4$$

$$\frac{-2}{-2} \quad \frac{4}{-2}$$

$$\boxed{z = -2}$$

$$\begin{aligned} \checkmark: \\ \textcircled{1} \quad & 5 - 3(1) + 3(-2) = -4 \\ & 5 - 3 - 6 = -4 \end{aligned}$$

$$-4 = -4 \quad \checkmark$$

$$\textcircled{2} \quad 2(5) + 3(1) - 2 = 15$$

$$10 + 3 - 2 = 15$$

$$15 = 15 \quad \checkmark$$

$$\textcircled{3} \quad 4(5) - 3(1) - 2 = 19$$

$$20 - 3 - 2 = 19$$

$$19 = 19 \quad \checkmark$$

Elimination

$$x - 3y + 3z = -4$$

$$2x + 3y - z = 15$$

$$4x - 3y - z = 19$$

$$4x - 3y = 19 + z$$

$$4x - 3y - 19 = z$$

$$2x + 3y = 15 + 4x - 3y - 19$$

$$2x + 6y = 15 + 4x - 19$$

$$-2x + 6y = 15 - 19$$

$$\frac{-2x + 6y}{-2} = \frac{-4}{-2}$$

$$x - 3y = 2$$

$$x = 2 + 3y$$

$$x - 3y + 3z = -4$$

$$2 + 3y - 3y + 3(4 - 2 + 3y) = -4$$

$$2 + 3y - 3y + 3(8 + 12y - 3y - 19) = -4$$

$$2 + 0 + 24 + 36y - 9y - 57 = -4$$

$$-31 - 9y + 36y = -4$$

$$-31 + 27y = -4$$

$$27y = 27$$

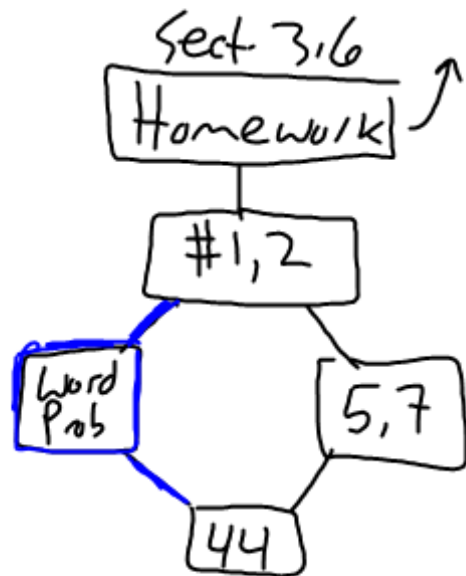
$$y = 1$$

Substitution

3.6

$$\textcircled{A} \begin{cases} 2x + y - z = 5 \\ 3x - y + 2z = -1 \\ x - y - z = 0 \end{cases}$$

$$\textcircled{B} \begin{cases} 2x - y + z = 4 \\ x + 3y - z = 11 \\ 4x + y - z = 14 \end{cases}$$





Who Lives In What House? Write-Up






The following clues make up a puzzle
Similar to a famous one from the 1950s.

Warmup:

1. The person eating ice cream lives in the brown house.
2. The person playing Basketball lives to the right of the pink house.
3. The person playing Volleyball lives in the magenta house.
4. The person eating waffles lives directly to the right of the brown house.

So, who lives in what house? And what do they eat?

Houses				
Color:	brown			
	magenta			
	pink			
Food:	waffles			
	spaghetties			
	ice cream			
Sport:	Basketball			
	Volleyball			
	Rugby			